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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,056	11/29/2001	Ronnie Ira Chaiken	50037.71US01	4833

27488 7590 06/21/2007

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EXAMINER	
DAO, THUY CHAN	

ART UNIT	PAPER NUMBER
2192	

MAIL DATE	DELIVERY MODE
06/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/997,056	CHAIKEN ET AL.	
	Examiner	Art Unit	
	Thuy Dao	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8,10-14,19-20* is/are pending in the application.

4a) Of the above claim(s) *2 and 9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-8,10-14,19-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to the amendment filed on April 3, 2007.

2. Claims 1, 3-8, 10-14, and 19-20 have been examined.

Response to Amendments

3. Per Applicants' request, claims 1, 3-4, 10-11, 14, and 19-20 have been amended and claims 2 and 9 have been canceled.

4. The 35 USC §101 rejection over claims 19-20 is withdrawn in view of Applicants' amendments.

Response to Arguments

5. The Applicants are thanked for a thorough reply. Applicants' arguments have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections – 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 3-8, 10-14, and 19-20 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,760,903 to Morshed et al. (art made of record, hereinafter "Morshed").

Claim 1:

Morshed discloses *a computer system for generating metadata for use during stack unwinding, comprising:*

a plurality of procedures, wherein each procedure comprises a sequence of binary instructions (e.g., FIG. 3, Intermediate Representation IR Data 64, col.6: 49 – col.7: 19, col.7: 46-63; FIG. 14, classes and methods in classes, col.22: 19-40)*;*

a runtime for generating unwind data, wherein the unwind data includes a first plurality of blocks of metadata having a first order of blocks (e.g., FIG. 4, IR Tree 66, col.7: 20-45; FIG. 5, tree 80 as IR Tree 66, col.8: 11-65)*,*

wherein each block of metadata is associated with a corresponding procedure in the plurality of procedures (e.g., FIG. 13, metadata of each class instances and method in said class instances, col.21: 18-41)*,*

wherein each block of metadata in the plurality of blocks of metadata includes at least one unwind table (e.g. col.13: 44-54; col.14: 35-43) *and*

at least one unwind information block (e.g., FIG. 6, col.9: 14 – col.10: 61; col.7: 46 – col.8: 48)*; and*

an unwind rewriter programmed to obtain the unwind data and reorder the first plurality of blocks of metadata to generate a second plurality of blocks of metadata having a second order (e.g., FIG. 4, Instrumentation Software 63, Instrumentation Data 69, col.7: 20-62)*,*

wherein the unwind rewriter reorders the first plurality of blocks in accordance with a second unwind table and a second unwind information block (e.g., col.25: 57-67; col.27: 7-16; col.27: 51 – col.28: 6)*,*

wherein the first plurality of blocks are reordered in response to a modification of the sequence of binary instructions within a procedure (e.g., FIG. 14, col.22: 19 – col.23: 29)*,*

such that the second plurality of blocks of metadata accurately represents the same runtime semantics as that of the unmodified sequence of binary instructions (e.g., FIG. 3, Instrumentation IR Data 65, output Object Code 46, col.6: 19 – col.7: 19).

Claim 3:

The rejection of claim 1 is incorporated. Morshed also discloses *the at least one unwind information block includes a region header describing a region of zero length* (e.g., FIG. 23, col.29: 36 – col.30: 16).

Claim 4:

Morshed discloses *a computer-implemented method of regenerating unwind data for a modified binary procedure wherein a current order of basic blocks within the modified binary procedure differs from an original order of the basic block the computer-implemented method comprising:*

obtaining original unwind data that describes the original order of the basic blocks (e.g., FIG. 4, IR Tree 66, col.7: 20-45; FIG. 5, tree 80, col.8: 11-65),

wherein the original unwind data is associated with an unwind table and unwind descriptor records (e.g., col.21: 18-41; col.13: 44-54; col.14: 35-43; col.9: 14 – col.10: 61; col.7: 46 – col.8: 48);

regenerating new unwind data from the original unwind data, wherein regenerating new unwind data includes generating new unwind tables and new unwind descriptor records (e.g., FIG. 20, col.25: 57-67; col.27: 7-16; col.27: 51 – col.28: 6),

wherein the new unwind data includes a reordering of the original order of basic blocks (e.g., col.7: 20-62), *and*

wherein the reordering represents the same runtime semantics as that of the unmodified sequence of binary instructions (e.g., col.6: 19 – col.7: 19); *and*

writing the new unwind data to the modified binary procedure (e.g., FIG. 4, col.7: 20-62; col.6: 19 – col.7: 19).

Claim 5:

The rejection of claim 4 is incorporated. Morshed also discloses *obtaining the unwind data comprises parsing the original unwind data that describes the original order of the basic blocks* (e.g., col.13: 44-54; col.9: 14 – col.10: 61).

Claim 6:

The rejection of claim 5 is incorporated. Morshed also discloses *parsing the original unwind data comprises identifying a start basic block and an end basic block era region associated with the modified binary procedure* (e.g., col.21: 18-41; col.8: 11-65).

Claim 7:

The rejection of claim 6 is incorporated. Morshed also discloses *identifying the end basic block of the region further comprises splitting a single basic block into two basic blocks, such that a first basic block ends on a last instruction of the region* (e.g., col.7: 2045; col.22: 19-40).

Claim 8:

The rejection of claim 6 is incorporated. Morshed also discloses *parsing the original unwind data further comprises identifying an unwind information block associated with a basic block in the original order of the basic blocks that includes a when action description record and establishing a link between the when action description record and the corresponding instruction in the basic block* (e.g., col.7: 46 – col.8: 48; col.25: 57-67).

Claim 10:

The rejection of claim 4 is incorporated. Morshed also discloses *regenerating the new unwind descriptor records further comprises determining when basic blocks identified in a single unwind table associated with the original order of basic blocks are associated with more than one unwind table associated with the current order of basic blocks, and creating a new region header describing a region of zero length*

when the basic blocks identified in the single unwind table associated with the original order of basic blocks are associated with more than one unwind table associated with the current order of basic blocks (e.g., FIG. 23, col.29: 36 – col.30: 16).

Claim 11:

Morshed discloses *a computer-implemented method for regenerating unwind data in response to a binary modification to a procedure, the procedure including a plurality of basic blocks, comprising:*

receiving unwind data comprising an unwind table and a plurality of unwind descriptor records (e.g., col.21: 18-41; col.13: 44-54; col.9: 14 – col.10: 61)

wherein the unwind data is associated with a procedure having binary instructions (e.g., col.22: 19-40)*;*

modifying the procedure to perturb the binary instructions of the procedure (e.g., col.7: 20-62)*;*

parsing the unwind data to identify a start basic block and an end basic block for a region associated with the procedure (e.g., FIG. 53, col.63: 54 – col.64: 59; col.7: 20-45; col. 8: 11-65; col.13: 44-54)*; and*

rewriting the unwind data, wherein the rewriting of unwind data includes a reordering of unwind data, in accordance with a second unwind table and a second plurality of unwind descriptor records (e.g., FIG. 20, col.25: 57-67; col.27: 7-16; col.27: 51 – col.28: 6)

such that the rewritten unwind data accurately represents the runtime semantics of the binary instructions before the binary instructions were perturbed (e.g., col.7: 20-62; col.6: 19 – col.7: 19).

Claim 12:

The rejection of claim 11 is incorporated. Morshed also discloses *parsing the unwind data further comprises generating a relationship between a when-descriptor within an unwind descriptor record and an instruction in the procedure, and rewriting*

the unwind data further comprises associating the when-descriptor with an appropriate unwind descriptor record in the second plurality of unwind descriptor records (e.g., FIG. 53, col.63: 54 – col.64: 59).

Claim 13:

The rejection of claim 11 is incorporated. Morshed also discloses *identifying the end basic block of the region further comprises splitting a single basic block into two basic blocks, such that a first basic block ends on a last instruction of the region* (e.g., col.21: 18-41; col.7: 46 – col.8: 48).

Claim 14:

The rejection of claim 11 is incorporated. Morshed also discloses *generating the second plurality of unwind descriptor records further comprises determining when basic blocks identified in a single unwind table associated with the unmodified procedure are associated with more than one unwind table associated with the binary modified procedure, and creating a new region header describing a region of zero length when the basic blocks identified in the single unwind table associated with the unmodified procedure are associated with more than one. unwind table associated with the binary modified procedure* (e.g., col.13: 44-54; col.9: 14 – col.10: 61; col.7: 20-62).

Claim 19:

Morshed discloses *a computer-readable storage medium having computer-executable instructions for rewriting unwind data in response to a binary modification to a procedure, the procedure including a plurality of basic blocks, the instructions comprising:*

receiving unwind data comprising an unwind table and a plurality of unwind descriptor records (e.g., col.21: 18-41; col.13: 44-54; col.14: 35-43; col.9: 14 – col.10: 61)

wherein the unwind data is associated with a procedure having binary instructions (e.g., col.6: 49 – col.7: 19; col.7: 46-63; col.22: 19-40)*;*

modifying the procedure to perturb the binary instructions of the procedure (e.g., col.7: 20-62)*;*

parsing the unwind data to identify a start basic block and an end basic block for a region associated with the procedure (e.g., col.22: 19-40; col.8: 11-65; FIG. 4, Instrumentation Software 63)*; and*

rewriting the unwind data, wherein the rewritten unwind data includes a reordering of the unwind data according to a second unwind table and a second plurality of unwind descriptor records (e.g., col.25: 57-67; col.27: 7-16; col.27: 51 – col.28: 6)

such that the rewritten unwind data accurately represents the runtime semantics of the binary instructions before the binary instructions were perturbed (e.g., col.22: 19 – col.23: 29; col.6: 19 – col.7: 19).

Claim 20:

Morshed also discloses *a computer-readable storage medium having computer-executable instructions for rewriting unwind data wherein a current order of basic blocks within the modified binary procedure differs from an original order oft, he basic blocks, the instructions comprising:*

obtaining original unwind data that describes the original order of the basic blocks (e.g., col.7: 20-45; col.8: 11-65; col.21: 18-41),

wherein the original unwind data is associated with an unwind table and unwind descriptor records (e.g., col.13: 44-54; col.14: 35-43; col.9: 14 – col.10: 61; col.7: 46 – col.8: 48)*;*

rewriting the original unwind data, wherein the rewritten unwind data includes a reordering of the original order of basic blocks (e.g., col.7: 20-62; col.25: 57-67),

wherein rewriting the original unwind data includes generating new unwind tables and new unwind descriptor records (e.g., col.27: 7-16; col.27: 51 – col.28: 6; col.22: 19 – col.23: 29), *and*

wherein the reordering represents the runtime semantics of the binary procedure before the binary procedure was modified (e.g., col.6: 19 – col.7: 19)*; and*

writing the rewritten unwind data to the modified binary procedure (e.g., FIG. 3, output Object Code 46, Instrumentation IR Data 65, col.7: 20-62).

Conclusion

8. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication should be directed to examiner Thuy Dao (Twee), whose telephone is (571) 272 8570. The examiner can normally be reached on the first Monday of the bi-week, and every Tuesday, Thursday, and Friday from 6:00AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam, can be reached at (571) 272 3695.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is (571) 272 2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

T. Dao

TUAN DAM
SUPERVISORY PATENT EXAMINER